

ENVIRONMENT AGENCY
MIDLANDS REGION
BIODIVERSITY STRATEGY



**This version prepared December 1996 by
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Midlands Region Biodiversity Strategy

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MIDLANDS REGION BIODIVERSITY STRATEGY

Definition of Biodiversity

"Biodiversity" is simply a new term meaning the variety of life, and biodiversity conservation is what has long been known as nature conservation. The importance of biodiversity conservation has been recognised internationally by the drawing up of a Biodiversity Convention intended to ensure the conservation of the full range of existing plant and animal species.

The Context

The UK Government signed the Biodiversity Convention at the Rio Earth Summit in June 1992. The Prime Minister promised then that a national action plan on biodiversity would be produced, and this was published in January 1994. Amongst the proposals contained within it was the intention to establish a Biodiversity Steering Group; this was subsequently set up, and included a representative of the NRA (Paul Raven).

The Steering Group reported its deliberations in two documents published in December 1995. As well as setting out in general terms the importance of biodiversity conservation and ways of achieving it, the report set out detailed and costed action plans for 116 key species and 14 key habitats, many of them aquatic or wetland-related and thus of particular interest to the Agency. It was also suggested that a further 286 species action plans would need to be prepared in the next few years, together with another 24 habitat action plans (for which a background was provided in the form of a number of less detailed habitat statements).

Parallel to this "official" activity (and produced with the intention of keeping the pressure on Government to deliver on the biodiversity issue) a consortium of voluntary conservation bodies have published "Biodiversity Challenge", a report which covers similar ground and includes action plans for 44 species and 6 habitats, though of a slightly different selection to the Steering Group report.

The Government has now responded to the Steering Group report, welcoming and endorsing the targets and action plans. This is significant in demonstrating the UK's commitment to biodiversity conservation, and it is obviously important for all Government agencies to consider what they can do to further this aim. The Steering Group's Chairman also makes the point that ".... the health of our biodiversity provides a litmus test for sustainable development". The Joint Nature Conservation Committee has already published "Conserving Britain's Biodiversity", which sets out the statutory nature conservation agencies' contribution to the national plan.

This strategy concentrates on the aquatic and wetland species and habitats identified in the Steering Group report which are definitely to be found in this Region. It looks at the contribution that the Environment Agency Midlands Region could and will be making to the national biodiversity targets.

Species of Relevance to Midlands Region

Several species of particular relevance to the Environment Agency in this Region are given full action plans in the Steering Group report:

- | | |
|---|---|
| Water vole*
(<i>Arvicola terrestris</i>) | - widespread across the Region, but showing a significant decline recently. |
| Otter*
(<i>Lutra lutra</i>) | - fairly common in Upper Severn, now spreading into the Avon and occasional reports in the Trent catchment. |
| Aquatic warbler
(<i>Acrocephalus paludicola</i>) | - a vagrant, principally to Lower Severn. |
| Bittern
(<i>Botaurus stellaris</i>) | - occasional scattered records in winter, but the breeding population in Lower Trent has been lost in recent years. |
| Great crested newt
(<i>Triturus cristatus</i>) | - widespread across the Region, but possibly recent declines. |
| Natterjack toad
(<i>Bufo calamita</i>) | - one introduced population in Cannock Chase, Staffordshire (Upper Trent). |
| Allis shad
(<i>Alosa alosa</i>) | - present in the Severn estuary, possibly spawning in the Severn. |
| Twaite shad
(<i>Alosa fallax</i>) | - spawning populations on the Severn and Teme. |
| Marsh fritillary
(<i>Eurodryas aurinia</i>) | - scattered records, mainly in Lower Severn and probably declining. |
| White-clawed crayfish*
(<i>Austropotamobius pallipes</i>) | - widespread, but recent declines due to crayfish plague. |
| Freshwater pearl mussel
(<i>Margaritifera margaritifera</i>) | - strong population in the Clun, occasional records elsewhere in Upper Severn and in Lower Severn. |
| Desmoulin's whorl snail
(<i>Vertigo moulinsiana</i>) | - present at one site in Shropshire, Upper Severn. |
| Ribbon-leaved water-plantain*
(<i>Alisma graminea</i>) | - present in one lake in Worcestershire, Upper Severn (one of only two UK sites). |
| Floating water-plantain
(<i>Luronium natans</i>) | - present at a few sites in Upper Severn, Upper Trent and Lower Trent. |
| Derbyshire feather-moss
(<i>Thamnobryum angustifolium</i>) | - a single UK site in the Peak District (Lower Trent). |

Regional action plans for these species are appended to this paper (Annex A).

There are also a few species which may occur in this Region, but the present situation requires further investigation:

- | | |
|--|---|
| Freshwater pea mussel*
(<i>Pisidium tenuilineatum</i>) | - possibly present in Upper Severn. |
| Depressed river mussel*
(<i>Pseudanodonta complanata</i>) | - probably present in Upper and Lower Severn. |
| Harbour porpoise
(<i>Phocoena phocoena</i>) | - possibly rare occurrences in Humber and Severn estuaries. |
| Slender green feather-moss
(<i>Hamatocaulis veruicosus</i>) | - possibly in upland areas. |

In the case of each of these species, the action is to gather further information (for which new survey may be required) to confirm whether the species is present. If it is shown to be so, a full action plan should be prepared.

For the species above marked with an asterisk (*), the Environment Agency is the National Contact Point, and thus has particular responsibilities for their conservation.

Note that the species listed above are all from the UK Steering Group's "Short List of Globally Threatened/Declining Species". The medium and long lists (running to 300 and 1,250 species respectively) will contain further species of relevance to Midlands Region, including, for example, the marsh warbler, burbot, Daubenton's bat, kingfisher, common frog, spined loach and Atlantic salmon, to name just a few obvious examples.

The only species of relevance which is covered in Biodiversity Challenge but not by the Steering Group is the sturgeon. As this has only ever been a vagrant to this Region (and to British coasts generally), and effective conservation measures can only really be applied to continental populations, this will not be considered further.

Habitats of Relevance to Midlands Region

The following wetland habitats, found within the Region, are given costed habitat action plans in the Steering Group report:

Reedbeds
Fens
Coastal and floodplain grazing marsh
Mesotrophic lakes

Regional action plans to conserve these habitats are appended to this paper (Annex B).

The following are set out as habitat statements in the Steering Group report, to be worked up into more detailed costed habitat action plans in the near future:

Grazing marsh
Fen, carr, marsh, swamp and reedbed
Lowland raised bog
Standing open water
Rivers and streams
Canals
Blanket bog
Saltmarsh
Estuaries
Urban

An overview of conservation measures and policies for these habitats in this Region is appended (see Annex C). These will be worked up into full habitat action plans as the national plans are prepared.

Nationally, the Agency is the biodiversity contact point for chalk rivers, but none are found in Midlands Region.

Implementation of Regional Biodiversity Action Plans

Biodiversity action points highlighted in the Regional Species and Habitat Action Plans will need to be reflected in the appropriate Local Environment Agency Plans (formerly Catchment Management Plans), to be progressed and monitored as for other issues and actions in LEAPs. Indeed, the recent draft guidance on production of LEAPs emphasises the importance of biodiversity as an issue and an environmental indicator, and the need to produce species action plans.

Annex D summarises the species and habitats relevant to each LEAP in Midlands Region.

Biodiversity will generally be a discrete issue in each LEAP. Where the biodiversity requirements of a catchment have not been fully assessed, a standard form of wording has been produced, to be used in any LEAP as a statement of intentions, as follows:

"In pursuance of the Government's commitment to biodiversity conservation, the Agency will be developing targets for species and habitats of conservation concern. These will relate to the targets for key wetland species and habitats as identified by the UK Biodiversity Action Plan, emphasising the contribution that Midlands Region can make to the national targets".

The details in the attached Annexes begin to identify such targets, and these need to be developed further. As well as the refining of habitat statements into action plans, plans for additional species will be considered, prepared and implemented as appropriate.

In addition to the LEAP annual reviews, a review of achievements in biodiversity conservation will also be included in the Regional Conservation and Recreation Annual Report.

Other Biodiversity Action

Given limited resources, the priority for the Agency in terms of action on biodiversity must be to contribute towards the targets set for the critical species and habitats identified nationally by the UK Steering Group. At a local level, many biodiversity plans are being drawn up, on a regional, county or district basis, which will highlight other species or habitats as local priorities. Whilst the Agency can agree general support for these initiatives, and indeed it is beneficial to be involved with them, its contribution should be directed towards the national priorities as they are reflected in the local plans.

Given this emphasis, it will be important to ensure that Regional action relates to national needs, by maintaining contacts with and through the lead organisations for each species and habitat. These are listed in Annex E (in so far as they are known at the time of writing)..

ANNEX A

SPECIES ACTION PLANS

Water vole
Otter
Aquatic warbler
Bittern
Great crested newt
Natterjack toad
Allis shad
Twaite shad
Marsh fritillary
White-clawed crayfish
Freshwater pearl mussel
Desmoulin's whorl snail
Ribbon-leaved water plantain
Floating water-plantain
Derbyshire feather-moss

WATER VOLE
(Arvicola terrestris)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The water vole is found throughout Britain but is confined mainly to lowland areas near water. Once common and widespread, this species has suffered a significant decline in numbers and distribution. A national survey in 1989-90 failed to find signs of voles in 67% of sites where they were previously recorded and it is estimated that this will rise to 94% by the turn of the century. A recent population estimate based on the number of latrines found suggested a total GB pre-breeding population of 1,200,000 animals.*
- 1.2 *As the lower reaches of rivers become unsuitable for habitation, the distribution of water voles becomes discontinuous and existing sites become isolated and vulnerable. There are few data available on the ecology or conservation requirements of this species as its former common status means that it has attracted little study.*
- 1.3 *The water vole is being considered for addition to parts of Schedule 9 of the WCA 1981.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Loss and fragmentation of habitats.*
- 2.2 *Disturbance of riparian habitats.*
- 2.3 *Predation by mink.*
- 2.4 *Pollution of watercourses and poisoning by rodenticides.*

4 *Action Plan Objectives and Targets*

- 4.1 *Maintain the current distribution and abundance of the species in the UK.*
- 4.2 *Ensure that water voles are present throughout their 1970s range by the year 2010, considering habitat management and possible translocation of populations to areas from where they have been lost.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *Water voles are found throughout the Region, though the species shows a rather localised distribution in most areas, and populations are smaller in Upper Severn.*

2 Objectives and Targets

- 2.1 Maintain the current distribution and abundance of the species in the Region.
- 2.2 Ensure that water voles are present throughout their 1970s range by the year 2010, through appropriate habitat management and possibly translocations, concentrating first on identified priority areas.

3 Proposed Actions for LEAPs

- 3.1 Promote appropriate management of riparian habitats to favour the water vole.
- 3.2 Take the ecological requirements of the species into account when setting statutory Water Quality Objectives for waters with significant populations.
- 3.3 Avoid the use of rodenticides and herbicides, especially Paraquat, in riparian habitat where water voles would be at risk.
- 3.4 Develop and implement management plans for all catchments supporting water vole populations, initially targeting priority areas and completing the process by 2005.

Area	LEAP	Actions
US	All LEAPs	3.1, 3.2, 3.3, 3.4
LS	All LEAPs	3.1, 3.2, 3.3, 3.4
UT	All LEAPs	3.1, 3.2, 3.3, 3.4
LT	All LEAPs	3.1, 3.2, 3.3, 3.4

4 Proposed EA Regional/National Actions

- 4.1 Ensure the provision of advice to relevant authorities and riparian owners on the conservation problems of the species.
- 4.2 Undertake research to identify the causes of decline and appropriate measures to arrest it, including interactions with mink, effects of habitat fragmentation, and the effects of rodenticides and herbicides in riparian habitats.
- 4.3 Raise awareness and improve understanding of the water vole as an indicator species of the quality of riparian habitats.

5 Actions So Far

- 5.1 Conservation actions in Tame and Severn Middle Reaches CMPs; survey of Hatfield Drains (Idle/Torne CMP); support for Staffordshire Water Vole Project.

OTTER
(Lutra lutra)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *Formerly widespread throughout the UK, the otter underwent a rapid decline in numbers from the 1950s to 1970s and was effectively lost from midland and south-eastern counties of England by the 1980s. Populations remain in Wales, south-west England and much of Scotland, where sea loch and coastal colonies comprise one of the largest populations in Europe. There is also a significant population of otters in Northern Ireland. The decline now appears to have halted and sightings are being reported in former habitats.*
- 1.2 *The otter is listed on Appendix 1 of CITES, Appendix II of the Bern Convention and Annexes II and IV of the Habitats Directive. It is protected under Schedule 5 of the WCA 1981 and Schedule 2 of the Conservation (Natural Habitats, etc) Regulations, 1994 (Regulation 38). The European sub-species is also listed as globally threatened on the IUCN/WCMC RDL.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Pollution of watercourses, especially by PCBs.*
- 2.2 *Insufficient prey associated with poor water quality.*
- 2.3 *Impoverished bankside habitat features needed for breeding and resting.*
- 2.4 *Incidental mortality, primarily by road deaths and drowning in eel traps.*

4 *Action Plan Objectives and Targets*

- 4.1 *Maintain and expand existing otter populations.*
- 4.2 *By 2010, restore breeding otters to all catchments and coastal areas where they have been recorded since 1960.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *The otter is fairly common in Upper Severn, and is expanding its range into Lower Severn, notably the Avon catchment. In the Trent catchment, there are only occasional widely scattered records.*

2 Objectives and Targets

- 2.1 To implement the national NRA Otter Conservation Strategy.
- 2.2 To encourage the continuing re-establishment of the otter in its former range in the Severn catchment, and to assist the development of viable populations in appropriate areas of the Trent catchment.

3 Proposed Actions for LEAPs

- 3.1 Where otter populations are currently strong, monitor populations only.
- 3.2 Where otter populations are expanding, encourage such expansion by provision of suitable habitat, holts, etc.
- 3.3 Where otters are currently absent, take no special action until colonisation is demonstrated.
- 3.4 By 2000, determine Statutory Water Quality Objectives for standing and running waters which will sustain otters.
- 3.5 Attempt to limit accidental killing or injury of otters (eg by provision of road underpasses, use of fyke net guards), particularly on key catchments.

Area	LEAP	Actions
Upper Severn	Severn U/S Perry	3.1, 3.4, 3.5
	Severn Perry - Teme	3.1, 3.4, 3.5
	Teme	3.1, 3.4, 3.5
	Stour	3.2, 3.4, 3.5
Lower Severn	Avon	3.2, 3.4, 3.5
	Severn Lower Reaches	3.2, 3.4, 3.5
	Severn Estuary	3.4, 3.5
Upper Trent	Upper Trent, Sow, Penk	3.2, 3.4, 3.5
	Dove & Churnet	3.2, 3.4, 3.5
	Tame & Anker	3.3, 3.4, 3.5
	Blythe, Cole, Bourne	3.3, 3.4, 3.5
Lower Trent	Trent Dove - Humber	3.3, 3.4, 3.5
	Derwent	3.2, 3.4, 3.5
	Soar	3.2, 3.4, 3.5
	Erewash	3.3, 3.4, 3.5
	Idle, Maun, Torne	3.2, 3.4, 3.5
	Humber Estuary	3.4, 3.5

4 Proposed EA Regional/National Actions

- 4.1 Collate information on prey productivity, biomass and pollution in occupied and likely re-colonisation areas.
- 4.2 Develop a standard methodology to analyse the level of pollution accumulation in otters.
- 4.3 Investigate the effects of disturbance on otter populations.
- 4.4 Develop and implement methods to estimate otter numbers and permit population modelling.
- 4.5 Use the otter to publicise the importance of water quality and riparian habitats to biodiversity.

5 Actions So Far

- 5.1 Working to national otter strategy; support for River Severn Otter Project and Staffordshire Otter Project; otter survey in tidal Trent; conservation actions in Idle/Torne and Upper Severn CMPs.

AQUATIC WARBLER
(Acrocephalus paludicola)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The aquatic warbler is a regular autumn migrant to sites in southern Britain, particularly to wetlands along the south coast from Kent to Cornwall. Although there is no accurate records of numbers, it is estimated that hundreds of individuals pass through Britain each year, comprising between 1% and 25% of the world population of this globally threatened species.*
- 1.2 *The aquatic warbler is listed on Annex I of the EC Birds Directive and Appendix II of the Bern Convention.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Wetland habitat deterioration in a number of important sites where the aquatic warbler regularly occurs. During migration through Britain it has a very localised distribution and is therefore very susceptible to factors affecting even a small number of sites.*

3 *Action Plan Objectives and Targets*

- 4.1 *This is a globally threatened species which passes through the UK on migration in autumn en route between eastern Europe and Africa. We do not know what proportion of the world population passes through the UK but it may be significant (> 10%). Further research is needed to assess the importance of the UK for this species but in the meantime its parlous global status means that the UK should ensure that the few sites known to be used (mostly reedbeds) are protected and appropriately managed.*
- 4.2 *Ensure all key passage sites are, and remain, protected.*
- 4.3 *Develop monitoring methodology to assess and monitor numbers and distribution of birds in the UK.*
- 4.4 *Undertake research to identify habitat requirements.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *The aquatic warbler is a vagrant in the Region on migration, principally to Lower Severn.*

2 Objectives and Targets

- 2.1 Protection of sites in the Region known to be used by the species on migration.

3 Proposed Actions for LEAPs

- 3.1 Ensure conservation of wetland sites used regularly by the species through careful consideration of Agency authorizations and operations which may affect them.

Area	LEAP	Actions
Lower Severn	All LEAPs	3.1

4 Proposed EA Regional/National Actions

Support research to identify habitat requirements for the aquatic warbler.

5 Actions So Far

- 5.1 General protection for wetlands.

BITTERN
(Botaurus stellaris)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The bittern is a declining, localised and rare breeding species. It is confined almost entirely to lowland marshes in Norfolk, Suffolk and Lancashire dominated by the common reed Phragmites australis, where it feeds principally on fish and amphibians. The UK population had declined to fifteen or sixteen booming males in 1994 from a peak of 70 pairs in the late 1960s, when it bred in eight counties. Numbers are boosted in winter by continental immigrants (usually less than 100).*
- 1.2 *The bittern is listed on Annex 1 of the EC Birds Directive and Appendix III of the Bern Convention. It is protected in the UK under Schedule 1 of the WCA 1981 and Schedule 1 of the Wildlife (Northern Ireland) Order 1985.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Loss of suitable large reedbeds through seral succession, inappropriate management (particularly drainage and water abstraction) and fragmentation.*
- 2.2 *Degradation of habitat through water pollution, pesticide and heavy metal pollution.*
- 2.3 *Food availability, especially of eels, affected by inappropriate habitat management and pollution.*
- 2.4 *Salt water intrusion into coastal reedbeds.*
- 2.5 *Problems due to small population size.*

4 *Action Plan Objectives and Targets*

- 4.1 *The bittern has declined by over 50% in the past 25 years. The objectives of the plan are modest, and represent an aim of increasing the population level to a more sustainable level over the next 25 years in stages. This appears to be relatively easily achievable by restoring a small proportion of existing reedbeds and by creating new reedbeds (thus linking with the reedbed habitat plan).*
- 4.2 *To arrest the decline of the bittern, maintaining at least 20 booming birds over the present range, and start to increase the population and range before the year 2000.*

- 4.3 *Increase the population to about 50 booming males by 2010, by ensuring appropriate management of the existing 22 large reedbeds where bittern once occurred.*
- 4.4 *Initiate work to secure the long-term future of bitterns in the UK by providing suitable habitat for a population of not less than 100 booming males by 2020.*
- 4.5 *Encourage the creation of at least 1,200 hectares of reedbed in blocks of greater than 20 hectares at existing former and new areas in England and Wales.*

B Regional Species Action Plan

1 Current Status

- 1.1 Bitterns formerly bred at Blacktoft Sands on the Humber Estuary, but they have not done so in recent years. There are scattered records of single birds in winter across the Region at suitable sites.

2 Objectives and Targets

- 2.1 Restore the bittern as a breeding species in the Region.
- 2.2 Support national targets to establish a more sustainable population level.
- 2.3 Encourage the creation of reedbeds suitable for bitterns.

3 Proposed Actions for LEAPs

- 3.1 Protect freshwater sites of high conservation importance from seawater incursion.
- 3.2 Promote the development and enhancement of suitable bittern breeding habitats in relevant LEAPs and WLMPs.
- 3.3 Protect any sites which are important for breeding or wintering bitterns having regard to the significance of formal and informal site designations when considering any proposed operations or authorizations.
- 3.4 Facilitate reedbed restoration through collaborative projects and appropriate wetland strategies to maintain wet conditions and prevent scrub encroachment in existing reedbeds.

Area	LEAP	Actions
US	All LEAPs	3.3, 3.4
LS	All LEAPs	3.3, 3.4
UT	All LEAPs	3.3, 3.4
LT	All LEAPs HUMBER ESTUARY	3.2, 3.3, 3.4 3.1, 3.2, 3.3, 3.4

4 Proposed EA Regional/National Actions

- 4.1 Support initiatives for the creation and management of large-scale reedbeds on agricultural land.
- 4.2 Implement water abstraction policies which give protection to nature conservation sites.

5 Actions So Far

- 5.1 General protection for wetlands.

GREAT CRESTED NEWT

(Triturus cristatus)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The great crested newt is still quite widespread in Britain. It is widespread but local in Scotland, where there are fewer than 1,000 individuals. The species may be numerous locally in parts of lowland England and Wales but is absent or rare in Cornwall and Devon. It is absent from Northern Ireland.*
- 1.2 *The species has suffered a decline in recent years with studies in the 1980s indicating a national rate of colony loss of approximately 2% over five years. It is estimated that there are a total of 18,000 ponds within Britain, although only 3,000 of these have been identified. The British population is amongst the largest in Europe, where it is threatened in several countries.*
- 1.3 *The great crested newt is listed on Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention. It is protected under Schedule 2 of the Conservation (Natural Habitats, etc) Regulations, 1994, (Regulation 38) and Schedule 5 of the WCA 1981.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Loss of suitable breeding ponds caused by water table reduction, infilling for development, farming, waste disposal, neglect or fish stocking and the degradation, loss and fragmentation of terrestrial habitats.*
- 2.2 *Pollution and toxic effects of agrochemicals.*

4 *Action Plan Objectives and Targets*

- 4.1 *Work in the early 1980s documented a 2% decline in the number of ponds every five years. A more recent report suggests that 42% of great crested newt populations in the London area have been lost in 20 years. Assuming a 0.4 - 2% annual loss of ponds, and assuming 18,000 populations, then between 72 - 360 populations are being lost each year. A target of 100 re-colonisations will offset these losses. This represents new ponds required to offset losses due to neglect and should be in addition to preventing site loss through development.*
- 4.2 *Where feasible, restore populations to 100 unoccupied sites each year for the next five years, creating new ponds and managing habitat where necessary.*
- 4.3 *Maintain the range, distribution and viability of existing great crested newt populations.*

B Regional Species Action Plan

1 Current Status

- 1.1 Great crested newts are widespread across the Region, but local, and there have been declines in recent years, especially in Lower Trent Area.

2 Objectives and Targets

- 2.1 Maintain the range, distribution and viability of existing great crested newt populations within the Region.

3 Proposed Actions for LEAPs

- 3.1 Protect and enhance ponds containing great crested newts by considering the likely effects of proposed operations and authorizations.
- 3.2 Seek to maintain the number and distribution of occupied sites through habitat restoration or creation of sufficient new sites near existing ones to compensate for local losses.

Area	LEAP	Actions
US	All LEAPs	3.1, 3.2
LS	All LEAPs	3.1, 3.2
UT	All LEAPs	3.1, 3.2
LT	All LEAPs	3.1, 3.2

4 Proposed EA Regional/National Actions

- 4.1 Publish guidance for local authorities, developers, land managers, and others on legal obligations for the species, local management and, where appropriate, translocation techniques.
- 4.2 Encourage the passing of information gathered during survey to BRC in order that it can be incorporated in a national database.
- 4.3 Promote, through publicity and media opportunities, a wider and more sympathetic understanding of amphibian conservation.

5 Actions So Far

- 5.1 Protection for individual sites through IFCs/planning liaison; creation of sites in Upper Severn.

NATTERJACK TOAD

(Bufo calamita)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The natterjack toad has suffered a substantial decline in numbers and range during the 20th century due to reductions in its habitat (heathland, sand dune and upper saltmarsh). Excluding translocation sites where populations have been recently re-established, the species can be found at four natural sites in Scotland and 35 in England, but had become extinct in Wales. It has now been introduced to 13 sites, including one in Wales.*
- 1.2 *The species is listed on Appendix II of the Bern Convention and Annexe IVa of the EC Habitats Directive. It is protected under Schedule 2 of the Conservation (Natural Habitats, etc) Regulations, 1994 (Regulation 38) and Schedule 5 of the WCA 1981.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Loss of habitat due to housing and industrial development, agriculture and reduced grazing on heathlands.*
- 2.2 *Fixation of dune systems and prevention of tidal inundation through the creation of sea defence mechanisms.*
- 2.3 *Habitat fragmentation, leading to genetic isolation of populations.*
- 2.4 *Acidification and loss of breeding pools.*

4 *Action Plan Objectives and Targets*

- 4.1 *Sustain all existing populations and, where appropriate, restore each population to its size in the 1970s. (The 1970s level was chosen as a date when baseline information was available, and represents a recent historic date for which the targets should be both achievable and measurable.)*
- 4.2 *Expand the number of populations within their former range by carrying out at least five further translocations by 2005. (A target of five sites was selected since this represents an approximate increase of 10%, and it is an achievable target. There may be difficulties selecting more than five sites over the next five years; more may divert conservation attention away from the need to enhance existing populations).*

B Regional Species Action Plan

1 Current Status

- 1.1 Whilst the Region lies outside the natural range of the natterjack in Britain, there have been a number of introductions, and there is at least one population still surviving on Cannock Chase, Staffordshire (Upper Trent Area), established from Merseyside stock. The maintenance of this population is important as a possible source for re-introductions should the original Merseyside population ever be eliminated.

2 Objectives and Targets

- 2.1 Sustain existing introduced populations of natterjacks in the Region.

3 Proposed Actions for LEAPs

- 3.1 Consider the likely effects of any proposed operations and authorizations on the Cannock Chase population, and co-operate with Staffordshire County Council over its conservation.

Area	LEAP	Actions
UT	UPPER TRENT/SOW/PENK	3.1

4 Proposed EA Regional/National Actions

- 4.1 Co-operate with the country conservation agencies over conservation of existing natterjack sites, possible translocations, research and promotional activities.

5 Actions So Far

- 5.1 None.

ALLIS SHAD
(Alosa alosa)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The allis shad is found along the coasts of western Europe, from southern Norway to Spain, and in the Mediterranean eastwards to northern Italy. It occurs mainly in shallow coastal waters and estuaries, but in the breeding season may penetrate large rivers to spawn. The population of this fish has declined significantly throughout Europe. In the UK adult fish occur in small numbers round the coast in most years. Although it may breed in the Solway Firth, there is no definite evidence of spawning stocks at present. It may now only breed in a few French rivers.*
- 1.2 *Allis shad is listed on Appendix II of the Bern Convention and Annexes II and V of the Habitats Directive. It is protected under Schedule 5 of the WCA 1981.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Pollution.*
- 2.2 *Overfishing.*
- 2.3 *Habitat destruction.*
- 2.4 *Artificial river obstructions.*

4 *Action Plan Objectives and Targets*

- 4.1 *Confirm the status of the allis shad as a breeding fish in UK waters.*
- 4.2 *Protect the allis shad in UK waters and ensure the continued survival of stocks.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *The allis shad is present in the Severn Estuary; it is probable that it no longer breeds in the catchment, though there is a small possibility that it shares the spawning grounds of the twaite shad in the Severn and Teme.*

2 *Objectives and Targets*

- 2.1 *If possible, confirm the status of the allis shad as a breeding species in the Severn catchment.*

- 2.2 Protect the allis shad in the Severn Estuary and ensure the continued survival of stocks.

3 Proposed Actions for LEAPs

- 3.1 Develop and implement favourable management plans for rivers and coastal waters in which this species occurs by 2004.
- 3.2 Secure favourable actions in catchment management plans covering any confirmed spawning sites within one year of discovery.

Area	LEAP	Actions
US	Severn Mid-Reaches	3.2
	Teme	3.2
LS	SEVERN ESTUARY	3.1
	Severn Lower Reaches	3.2

4 Proposed EA Regional/National Actions

- 4.1 If the allis shad is confirmed as breeding in the UK, investigate the reasons for its limited breeding distribution and seek to extend and re-create appropriate conditions at other sites.
- 4.2 Consider establishment of a monitoring scheme to record incidental catches by anglers and commercial fishermen, and pass records to the Biological Records Centre for a national database.
- 4.3 Prepare and distribute guidance to coastal fishermen and angling centres in appropriate areas, explaining threats to shad, the legal protection given to allis shad, and the need to record catches.
- 4.4 Promote genetic research to examine the speciation between the two species of shad.

5 Action So Far

- 5.1 Pass put in at Upper Lode (Severn Lower Reaches LEAP); pass to be considered at Powick Weir (Teme CMP).

TWAITE SHAD
(Alosa fallax)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The twaite shad occurs along the west coast of Europe, the eastern Mediterranean, and in the lower reaches of a few large rivers along these coasts. It has declined in many parts of Europe: in the UK it is now virtually absent in several rivers where it is believed previously to have spawned. Rivers which still have spawning stocks include the Wye, Usk, Severn and Tywi. It may also spawn in river mouths around the Solway Firth, the only known area around Scotland where mature fish are found each summer.*
- 1.2 *The species is listed on Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Pollution.*
- 2.2 *River and estuary barriers.*
- 2.3 *Overfishing.*
- 2.4 *Habitat destruction.*

4 *Action Plan Objectives and Targets*

- 4.1 *Ensure the continued survival of twaite shad around the UK.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *Twaite shad are present in the Severn Estuary, and spawn in the Severn and the Teme as far up as Diglis Weir and Powick Weir respectively.*

2 *Objectives and Targets*

- 2.1 *Ensure the continued survival of the twaite shad as a breeding species in the Severn catchment.*

3 *Proposed Actions for LEAPs*

- 3.1 *Develop and implement management plans for the known spawning areas in the Severn catchment by 2000.*

- 3.2 Secure favourable actions in catchment management plans covering any new spawning sites, within one year of discovery.
- 3.3 Investigate the reasons for the limited breeding distribution and seek to extend and re-create breeding grounds at other sites.
- 3.4 Ensure protection for the twaite shad in coastal waters.

Area	LEAP	Actions
US	SEVERN MID-REACHES TEME	3.1, 3.2, 3.3 3.1, 3.2, 3.3
LS	SEVERN ESTUARY Avon Severn Lower Reaches	3.4 3.2 3.2

4 Proposed EA Regional/National Actions

- 4.1 Encourage anglers and commercial fishermen to record and release the twaite shad they catch, establish a monitoring scheme, and pass records to the Biological Records Centre for a national database.
- 4.2 Prepare and distribute guidance to coastal fishermen and angling centres in appropriate areas, explaining threats to shad, the need for records, and the desirability of releasing twaite shad.
- 4.3 Promote genetic research to examine the speciation between the two species of shad.

5 Actions So Far

- 5.1 Pass put in at Upper Lode (Severn Lower Reaches LEAP).

MARSH FRITILLARY (*Eurodryas aurinia*)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *The marsh fritillary butterfly is declining in almost every European country and is now extinct in northern Belgium. The UK is now believed to be one of the major European strongholds for the species, but even here it has declined substantially over the last 150 years. In Britain, its range has reduced by over 62%, and it has recently disappeared from most of eastern England and eastern Scotland. It is still quite widespread in parts of south-west England and Wales, but colonies are estimated to be disappearing at a rate of well over 10% per decade. In Ireland, the butterfly's range is thought to have contracted by 50%.*
- 1.2 *Surveys in 1990 indicated that there were 228 definite colonies in England, 111 in Wales, 35 in Scotland and 58 in Northern Ireland, in about 20 key areas. 44% of colonies known in Britain are within SSSIs, and 11 within NNRs.*
- 1.3 *The marsh fritillary breeds in two main habitats, damp neutral or acid grasslands (Rhos pastures) and dry chalk and limestone grasslands. Colonies are often small and prone to extinction, so extensive networks of habitat patches which permit re-colonisation are essential to their long term survival.*
- 1.4 *The butterfly is listed on Annexe II of the Habitats Directive and Appendix II of the Bern Convention. It is also protected under Schedule 5 of the WCA 1981 (in respect of sale only), and fully protected under Schedule 5 and 7 of the Wildlife Order (Northern Ireland) 1985.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Agricultural improvement of marshy and chalk/limestone grasslands.*
- 2.2 *Afforestation and development of habitats.*
- 2.3 *Changes in grazing stock and practice.*
- 2.4 *Increasing fragmentation and isolation of habitats.*

4 *Action Plan Objectives and Targets*

- 4.1 *Halt current decline and maintain the present range of the species.*
- 4.2 *Maintain at least five large populations within 20 predetermined key areas.*

4.3 *Ensure that a minimum number of colonies are protected within SSSIs.*

B Regional Species Action Plan

1 Current Status

- 1.1 Having suffered significant declines in recent decades, the marsh fritillary is now reduced to just a few known sites in the Region, mainly in Lower Severn, and it is probably extinct in Upper Trent.

2 Objectives and Targets

- 2.1 Maintain the present distribution of the species within the Region, and encourage recolonisation of former habitats where appropriate.

3 Proposed Actions for LEAPs

- 3.1 Consider the likely impacts of proposed operations and authorizations on sites supporting existing marsh fritillary populations.
- 3.2 Encourage favourable land management on occupied grasslands and those within dispersal range of existing populations.

Area	LEAP	Actions
US	All LEAPs	3.1, 3.2
LS	All LEAPs	3.1, 3.2
LT	All LEAPs	3.1, 3.2

4 Proposed EA Regional/National Actions

- 4.1 Co-operate with the country conservation agencies on research and promotional activities related to the marsh fritillary.

5 Actions So Far

- 5.1 General protection for wetlands.

WHITE-CLAWED CRAYFISH (*Anstropotamobius pallipes*)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *In Europe this crayfish was formerly widespread in France, Spain and Italy, but populations are now confined to a diminishing number of areas. It is the only species of freshwater crayfish which is native to the UK. It is widespread in clean, calcareous streams, river and lakes in England and Wales and occurs in a few areas in Northern Ireland, but many populations have been lost since the 1970s.*
- 1.2 *This species is listed in Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive. It is classed as globally threatened by IUCN/WCMC. It is protected under Schedule 5 of the WCA in respect of taking from the wild and sale, and is proposed for addition to Schedule 5 of the Wildlife (Northern Ireland) Order 1985.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Crayfish plague, a disease caused by the fungus Aphanomyces astaci which is carried by some North American crayfish including the signal crayfish Pacifastacus leniusculus. Spores from the fungus can also be transmitted by a variety of other means, including water, fish and damp equipment.*
- 2.2 *Direct competition for food and habitat from non-native crayfish: three non-native crayfish species are now breeding in the wild.*
- 2.3 *Habitat modification and management of waterbodies.*
- 2.4 *Pollution, particularly pesticides and sewage.*

4 *Action Plan Objectives and Targets*

- 4.1 *Attempt to maintain the present distribution of this species by limiting the spread of crayfish plague, limiting the spread of non-native species, and by maintaining appropriate habitat conditions.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *The white-clawed crayfish is widespread across the Region, especially in the upper tributaries of the main catchments, though there are few records on the Severn below Tewkesbury, on the main Avon, or in the Trent catchment below Nottingham. Three confirmed outbreaks of*

crayfish plague, and as many unconfirmed incidents, have affected native crayfish populations in the Region.

2 Objectives and Targets

- 2.1 Maintain the present distribution of the species in the Region by limiting the spread of crayfish plague, limiting the spread of non-native crayfish species, and by maintaining appropriate habitat conditions.
- 2.2 Support MAFF policy on "no-go" areas for crayfish farms.

3 Proposed Actions for LEAPs

- 3.1 Ensure appropriate habitat management is undertaken in areas where there are native crayfish populations.
- 3.2 Establish the feasibility of eradicating non-native crayfish populations from the wild where they threaten sensitive sites or important populations of native crayfish, and undertake such eradication if appropriate.
- 3.3 Investigate the potential for recovery of native crayfish in areas affected by crayfish plague, and support re-introduction programmes if feasible.

Area	LEAP	Actions
US	Severn Upper Reaches	3.1, 3.2, 3.3
	Teme	3.1, 3.2, 3.3
	Severn Mid Reaches	3.1, 3.2, 3.3
LS	Severn Lower Reaches	3.1, 3.3
	Avon	3.1
UT	All LEAPs	3.1
LT	All LEAPs	3.1
	Soar	3.1, 3.2
	Derwent	3.1, 3.3

4 Proposed EA Regional/National Actions

- 4.1 Control the use of crayfish as bait by anglers with byelaws.
- 4.2 Provide advice on the conservation of the native crayfish and the management of non-native crayfish populations.
- 4.3 Provide advice on disinfection procedures to prevent the transmission of crayfish plague, and ensure anglers and other users of the aquatic environment are aware of the risks of spreading plague on equipment.

- 4.5 Increase public awareness of the presence of native crayfish, the threats to it and the need for conservation.

5 Actions So Far

- 5.1 Survey/collection of records; protection for individual populations through licence consultations; survey and possible control of signal crayfish in Twyford Brook (Soar LEAP).

FRESHWATER PEARL MUSSEL

(Margaritifera margaritifera)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *Since 1950 the freshwater pearl mussel has been recorded from 151 ten km squares in Britain and 14 ten km squares in Northern Ireland. The British range is to the north and west of a line running from Scarborough in Yorkshire to Beer Head in Devon. Many populations may not have produced young for over 30 years as site records are often based on observers only finding dead shells. In Ireland the mussel occurs throughout the country, being widespread in the south and west. It has, however, declined in the east, and recruitment rates are not known for most populations.*
- 1.2 *The species is dependent on the presence of salmonid fish as hosts for its larvae.*
- 1.3 *This mussel is classed as vulnerable on the IUCN/WCMC RDL. It is listed on Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention and is protected under Schedule 5 of the WCA 1981 (for killing and injuring only) and the Wildlife Order (Northern Ireland) 1985. It is currently being considered for increased protection under the WCA 1981.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Poor water quality, including nutrient enrichment (which also affects the numbers of host fish).*
- 2.2 *Habitat removal and alteration through development, drainage schemes, flow regulation and fisheries management.*
- 2.3 *A decline in populations of host fish.*
- 2.4 *Conifer planting, exacerbating the effects of river acidification.*
- 2.5 *Amateur pearl fishing, aided by improved accessibility.*
- 2.6 *Poor land management in the catchment (eg overgrazing leading to sedimentation from soil erosion).*

4 *Action Plan Objectives and Targets*

- 4.1 *Establish the current status of the mussel throughout the UK, and its ecological requirements at all stages of the life cycle.*
- 4.2 *Maintain, and where possible increase the size of existing populations.*

- 4.3 *Encourage re-colonisation of this species into at least 10 suitable former areas by 2005.*
- 4.4 *Establish educational and monitoring programmes.*
- 4.5 *Determine the effects of controlled exploitation in fished rivers, and enforce legislation on pearl fishery practices.*

B Regional Species Action Plan

1 Current Status

- 1.1 Occasional records in Upper Severn and in the Avon catchment, but the only strong population known is in the Clun.

2 Objectives and Targets

- 2.1 Establish the status of the species across the Region.
- 2.2 Maintain and where possible increase the size of existing populations.
- 2.3 Encourage recolonisation of the species into suitable former areas.
- 2.4 Establish monitoring programmes.

3 Proposed Actions for LEAPs

- 3.1 Ensure that water quality requirements for the pearl mussel form the basis for setting Statutory Water Quality Objectives where the species is present.
- 3.2 Ensure that catchment management plans, flood defence activities, water level management plans and freshwater fisheries management take account of the requirements of the species.
- 3.3 In discussion with other bodies, identify catchments where there is the best chance of re-establishing the species.

Area	LEAP	Actions
US	TEME	3.1, 3.2
	Severn Upper Reaches	3.1, 3.2, 3.3
	Severn Mid Reaches	3.1, 3.2, 3.3
LS	Avon	3.1, 3.2, 3.3

4 Proposed EA Regional/National Actions

- 4.1 Provide advice to river and land managers, water bailiffs and police on the presence and legal status of the pearl mussel, and appropriate ~~methods of management~~ for its conservation.

- 4.2 Carry out research to investigate key threats; fish hosts; life cycle and life history in different places; tolerance to variation in acidity; genetic variation; viability of re-establishing populations; effects of commercial exploitation.

5 Actions So Far

- 5.1 Survey/collection of records.

DESMOULIN'S WHORL SNAIL (*Vertigo moulinsiana*)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *This species was formerly considered threatened on a global scale but new records suggest that this is not the case. In the UK, Desmoulin's whorl snail is known from a series of sites in England stretching in a broad band from Dorset to Norfolk. It is restricted to long-established calcareous wetlands, usually where there is a tall growth of sedges (*Carex* spp), saw-sedge (*Cladium mariscus*), reed-grass (*Glyceria maxima*) or reed (*Phragmites australis*) and a wide variety of other emergent waterside vegetation.*
- 1.2 *This snail is listed on Annex II of the EC Habitats Directive, and is listed as rare in the GB Red List.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Destruction of wetlands.*
- 2.2 *Habitat degradation, particularly as a result of changes in hydrology.*

4 *Action Plan Objectives and Targets*

- 4.1 *Maintain viable populations of the snail across its current range to ensure favourable conservation status.*
- 4.2 *Survey to determine the full extent of the snail's current distribution and precise habitat requirements.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *Desmoulin's Whorl Snail is known from fen habitat in Sweat Mere SSSI, Shropshire, within the Upper Severn Area.*

2 *Objectives and Targets*

- 2.1 *Maintain a viable population of the snail at its existing site in Shropshire.*
- 2.2 *Determine the occurrence of the snail at any other sites in the Region, and its habitat requirements at all sites.*

3 Proposed Actions for LEAPs

- 3.1 Ensure that flood defence activities and water level management plans take account of the requirements of the species.
- 3.2 Ensure that abstraction policies take account of the need to protect the snail.
- 3.3 Encourage the sympathetic management of occupied wetland sites.

Area	LEAP	Actions
US	SEVERN MID REACHES	3.1, 3.2, 3.3

4 Proposed EA Regional/National Actions

- 4.1 Promote ecological research to determine habitat requirements more fully, to inform management advice.

5 Actions So Far

- 5.1 Protection for site through IFCs, etc.

RIBBON-LEAVED WATER PLANTAIN

(Alisma gramineum)

A National Species Action Plan (extracts)

1 *Current Status*

1.1 *This short-lived perennial aquatic is now confined to two sites in the UK: a shallow lake in Worcestershire, where it has been known for many years, and a drainage channel in Lincolnshire, where it was rediscovered in 1991 after a 20 year absence from the site. It was formerly recorded from two other sites in Norfolk and Cambridgeshire in the 1970s, but has disappeared from both sites. This aquatic plantain is rare and sporadic in mainland Europe, where it is probably declining. Populations fluctuate markedly from year to year, but the reasons are largely unknown.*

1.2 *The plant is currently protected by Schedule 8 of the WCA.*

2 *Current Factors Causing Loss or Decline*

2.1 *Eutrophication of water bodies and associated algal growth.*

2.2 *Competition from coarse marginal and aquatic species.*

4 *Action Plan Objectives and Targets*

4.1 *Protect species at existing sites and ensure continued survival of viable populations.*

4.2 *Restore to five formerly occupied sites by the year 2005.*

B Regional Species Action Plan

1 *Current Status*

1.1 *In this Region, ribbon-leaved water plantain is only found at Westwood Great Pool near Droitwich, in the Salwarpe catchment, where the population is thought to be secure.*

2 *Objectives and Targets*

2.1 *To ensure the conservation of the species at the one existing site.*

2.2 *To assist consideration of possible sites for restoration/translocation of the species.*

3 *Proposed Actions for LEAPs*

3.1 *Consider the likely effects of any applications for Agency authorizations on the survival of the Worcestershire population.*

- 3.2 Investigate the source of enrichment at the Worcestershire site and monitor water quality.
- 3.3 Discuss with English Nature the suitability of other sites for restoration/translocation of populations.

Area	LEAP	Actions
US	SEVERN MID REACHES Teme Stour	3.1, 3.2, 3.3 3.3 3.3
LS	Avon Severn Lower Reaches	3.3 3.3

4 Proposed EA Regional/National Actions

- 4.1 Identify water quality requirements which will maintain population levels at all known sites, and use these as the basis for setting standards.

5 Actions So Far

- 5.1 Protection for site through IFCs, etc.

FLOATING WATER-PLANTAIN

(*Luronium natans*)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *Floating water plantain is found only in Europe. It occurs in a range of freshwater situations but thrives best in open areas with a moderate degree of disturbance, where the growth of emergent vegetation is held in check. Populations of this species fluctuate greatly in size, often increasing when water levels drop to expose the bottom or in part-dredged canals removing plant competition.*
- 1.2 *The distribution of this plant is localised in the UK, with recent records from Wales, the West Midlands and northern England. It also occurs as an introduction to ditches in the Norfolk Broads and a few localities in Scotland. Since 1980 it has been recorded from 35 ten km squares, approximately half of them from canals and appears to have spread eastwards from the "core" natural habitat in the lakes of Snowdonia and mid-Wales, via the canal system in the nineteenth century.*
- 1.3 *Floating water plantain is listed on Annexes II and IV of the Habitats Directive and Appendix 1 of the Bern Convention. It is protected under Schedule 4 of the Conservation (Natural Habitats, etc) Regulations, 1994 and Schedule 8 of the WCA 1981.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *The main threat to canal populations is from the re-opening of waterways, with subsequent high levels of motorised recreational boat traffic. This can directly suppress growth of the plant through increased turbidity of the water.*
- 2.2 *Water acidification.*

4 *Action Plan Objectives and Targets*

- 4.1 *Maintain the present range.*
- 4.2 *Where the potential exists, increase the size of the individual populations.*
- 4.3 *Develop a strategy to safeguard the species, wherever possible, in its canal habitats.*
- 4.4 *Ascertain the importance of the UK population in a European context.*

B Regional Species Action Plan

1 Current Status

- 1.1 Floating water-plantain is present at several sites in Upper Severn and Upper Trent (mainly canal SSSIs, including Cannock Extension Canal, a proposed SAC) and in Lower Trent at one SSSI (Beacon Hill, Leics), and one undesignated site (Snow Sewer, Notts).

2 Objectives and Targets

- 2.1 Maintain the current distribution of the species in the Region.

3 Proposed Actions for LEAPs

- 3.1 Consider the effects of proposed operations and authorizations on sites supporting populations of this species.
- 3.2 Seek to minimise the effects of acidification on waters containing this species in acid-sensitive areas, notably by dissuading inappropriate plantings of coniferous forests in sensitive lake catchments and around river headwaters important for the species.

Area	LEAP	Actions
US	All LEAPs	3.1, 3.2
UT	UPPER TRENT/SOW/PENK	3.1
LT	SOAR IDLE/TORNE	3.1 3.1

4 Proposed EA Regional/National Actions

- 4.1 Support research into the ecological requirements of floating water-plantain, to support site management and translocation programmes, and into the effects of acidification on the survival of the species.

5 Actions So Far

- 5.1 Protection for sites through IFCs, etc; conservation actions in Idle/Torne CMP.

DERBYSHIRE FEATHER-MOSS
(Thamnobryum angustifolium)

A National Species Action Plan (extracts)

1 *Current Status*

- 1.1 *Derbyshire feather-moss is endemic to the UK and is found at only one site on a seasonally-inundated, shaded limestone rock-face alongside a calcareous spring in Derbyshire.*
- 1.2 *The species is listed as critically endangered on the GB Red List and as endangered on the IUCN/WCMC global list. It is protected under Schedule 8 of the WCA 1981.*

2 *Current Factors Causing Loss or Decline*

- 2.1 *Botanical collection.*
- 2.2 *Recreational activities, such as rock climbing and pot-holing.*

4 *Action Plan Objectives and Targets*

- 4.1 *Safeguard at its only known site.*
- 4.2 *Safeguard at any other sites at which it is found.*
- 4.3 *Promote ecological research on this species to aid effective conservation management.*

B Regional Species Action Plan

1 *Current Status*

- 1.1 *Derbyshire feather-moss is found only at Cressbrook Dale SSSI in the Wye catchment, Lower Trent.*

2 *Objectives and Targets*

- 2.1 *To ensure the conservation of the species at the one existing site.*
- 2.2 *To assist conservation of any other populations which may be identified.*

3 *Proposed Actions for LEAPs*

- 3.1 *Consider the likely effects of any applications for Agency authorizations on the survival of the Derbyshire population.*
- 3.2 *Monitor water quality at the Derbyshire site.*

Area	LEAP	Actions
LT	DERWENT	3.1, 3.2

4 Proposed EA Regional/National Actions

- 4.1 Investigate the ecological and habitat requirements of the species to help underpin management advice and identify potential threats to the survival of the population.

5 Actions So Far

- 5.1 Protection for site through IFCs, etc.

ANNEX B

HABITAT ACTION PLANS

Reedbeds

Fens

Coastal and floodplain grazing marsh

Mesotrophic lakes

REEDBEDS

A. National Habitat Action Plan (extracts)

1. *Current Status*

Reedbeds are wetlands dominated by stands of the common reed Phragmites australis, wherein the water table is at or above ground level for most of the year. They tend to incorporate areas of open water and ditches, and small areas of wet grassland and carr woodland may be associated with them. There are about 5,000 ha of reedbeds in the UK, but of the 900 or so sites contributing to this total, only about 50 are greater than 20 ha, and these make a large contribution to the total area. Reedbeds are amongst the most important habitats for birds in the UK. Five GB Red Data Book invertebrates are also closely associated with reedbeds.

2. *Current Factors affecting the Habitat*

- Small total area of habitat and critically small population sizes of several key species dependent on the habitat.*
- Loss of area by excessive water extraction and, in the past, land drainage and conversion to intensive agriculture.*
- Lack of or inappropriate management of existing reedbeds leading to drying, scrub encroachment and succession to woodland.*
- Most of the important reedbeds are found on the coast of eastern England, where relative sea-level rise is predicted to lead to the loss of significant areas of habitat.*
- Pollution of freshwater supplies to the reedbed: siltation may lead to drying; toxic chemicals may lead to loss of fish and amphibian prey for key species; accumulation of poisons in the food chain and eutrophication may cause reed death.*

4. *Action Plan Objectives and Proposed Targets*

- Identify and rehabilitate by the year 2000 the priority areas of existing reedbed (targeting those of 2ha or more) and maintain this thereafter by active management.*
- Create 1,200 ha of new reedbed on land of low nature conservation interest by 2010.*

B. Regional Habitat Action Plan

1. Current Status

- 1.1. Extensive reedbeds are found, in this Region, only around the Humber Estuary, though smaller examples of the habitat are to be found in all Areas, especially in low-lying ground with impeded drainage, along watercourses of pumped-drainage systems, etc.

2. Objectives and Targets

- 2.1 Maintain the existing extent of reedbeds and encourage their enhancement through active management where appropriate.
- 2.2 Seek opportunities to create new reedbeds where feasible.

3. Proposed Actions for LEAPs

- 3.1 Develop sympathetic water abstraction, water level management and coastal zone management plans/policies in order to protect existing reedbeds.
- 3.2 Encourage the establishment of new reedbeds and the favourable management of key existing reedbeds by providing advice based on the most recently available prescriptions.
- 3.3 Ensure that authorities creating new reedbeds for effluent treatment and other primary purposes receive up-to-date advice on reedbed creation for wildlife.
- 3.4 Seek opportunities, in partnership with other interested bodies, for creating extensive new reedbeds (of at least 20 ha).

Area	LEAP	Actions
US	All LEAPs	3.1, 3.2, 3.3
LS	All LEAPs	3.1, 3.2, 3.3
UT	All CMPs	3.1, 3.2, 3.3
LT	All LEAPs Idle/Torne Trent (Dove- Humber)	3.1, 3.2, 3.3 3.4 3.4

4. Proposed EA Regional/National Actions

- 4.1 Ensure the continued surveillance of population distribution, size and productivity of key reedbed species and of water levels, water quality and current reedbed management for all significant reedbeds.
- 4.2 Begin large-scale trials of the use of reedbeds for reducing point and diffuse source agricultural pollution by 1998. Trials should include the study of the most effective means of reedbed establishment, management and their benefits to wildlife.

5 Actions So Far

- 5.1 General protection for the habitat; consideration/creation of new sites through Severn and Trent Valley Wetlands projects.

FENS

A. National Habitat Action Plan (extracts)

1. *Current Status.*

The UK is thought to host a large proportion of the fen surviving in the EU. As in other parts of Europe fen vegetation has declined dramatically in the past century.

Fens are peatlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall; they are minerotrophic. Two types of fen can broadly be distinguished: topogenous and soligenous. Topogenous fens are those where water movements in the peat or soil are generally vertical. They include basin fens and floodplain fen. Soligenous fens, where water movements are predominantly lateral, include mires associated with springs, rills and flushes in the uplands, valley mires, springs and flushes in the lowlands, trackways and ladder fens in blanket bogs and laggs of raised bogs.

Fen habitats support a diversity of plant and animal communities. Some can contain up to 550 species of higher plants, a third of our native plant species; up to and occasionally more than half the UK's species of dragonflies, several thousand other insect species, as well as being an important habitat for a range of aquatic beetles.

In intensively farmed lowland areas fens occur less frequently, are smaller in size and more isolated than in other parts of the UK.

2. *Current Factors Affecting the Habitat*

Fens are dynamic semi-natural systems and in general, management is needed to maintain open-fen communities and their associated species richness. Without appropriate management (e.g. mowing, grazing, burning, peat cutting, scrub clearance), natural succession will lead to scrub and woodland forming. Current factors affecting this habitat type are:-

- Past loss of area by drainage and conversion to intensive agriculture.*
- Excessive water abstraction from aquifers has dried up or reduced spring line flows, and generally lowered water tables. Abstractions also have affected the natural balance between the differing water qualities of ground water and surface water.*
- Small total area of habitat and critically small population sizes of several key species dependent on the habitat.*
- Lack of or inappropriate management of existing fens leading to drying, scrub encroachment and succession to woodland.*

- *Valley fens are particularly susceptible to agricultural run-off and afforestation within the catchment.*
- *Enrichment or hypertrophication resulting in changing plant communities.*

4. Action Plan Objectives and Proposed Targets

- *Identify priority fen sites in critical need of, and initiate, rehabilitation by the year 2005. All rich fen and other sites with rare communities should be considered.*
- *Ensure appropriate water quality and water quantity for the continued existence of all SSSI/ASSI fens by 2005.*

B. Regional Habitat Action Plan

1. Current Status

- 1.1 Fens, in the strict sense, are limited in this Region to small and isolated pockets of habitats, mainly within SSSIs, such as around the Shropshire and Staffordshire meres.

2. Objectives and Targets

- 2.1 Maintain the existing extent of fens and encourage their enhancement through active management where appropriate.
- 2.2 Ensure appropriate water quality and water quantity for the continued existence of all SSSI fens.

3. Proposed Actions for LEAPs

- 3.1 Review water quality and set standards for SSSI fens by 1998 and meet these targets by 2010.
- 3.2 Review water resource requirements for SSSI fens by 1998 and meet these targets by 2010.
- 3.3 Prepare and implement water level management plans, where appropriate.

Area	LEAP	Actions
US	All LEAPs	3.1, 3.2, 3.3
LS	All LEAPs	3.1, 3.2, 3.3
UT	All LEAPs	3.1, 3.2, 3.3
LT	All LEAPs	3.1, 3.2, 3.3

4. **Proposed EA Regional/National Actions**

- 4.1 Provide research into the ecology of fen species, particularly in relation to water quality, water quantity and management requirements.

5 **Actions So Far**

- 5.1 General protection for the habitat.

COASTAL AND FLOODPLAIN GRAZING MARSH

A. National Habitat Action Plan (extracts)

1. *Current Status*

Grazing marsh is defined as periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. The ditches are especially rich in plants and invertebrates. Almost all areas are grazed and some are cut for hay or silage. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of tall fen species like reeds, although they may abut with fen and reed swamp communities.

The exact extent of grazing marsh in the UK is not known but it is possible that there may be a total of 300,000 ha. England holds the largest proportion with an estimate in 1994 of 200,000 ha. However, only a small proportion of this grassland is semi-natural supporting a high diversity of native plant species (5,000 ha in England, an estimated 10,000 ha in the UK).

Grazing marshes are particularly important for the number of breeding waders such as snipe, lapwing and curlew they support. Internationally important populations of wintering wildfowl also occur including Bewick swans and whooper swans.

2. *Current Factors affecting the Habitat*

Losses in the whole UK have been significant in the last 60 years. Losses of grazing marsh from the early 1930s to the mid-1980s include 64% in the Greater Thames, 48% in Romney Marsh and 37% in Broadland. Some of the last remaining unimproved grasslands are highly sensitive to increased nutrient loadings. Unless conservation measures to retain this habitat type are in place, with particular emphasis on the maintenance of water levels, flooding regimes and appropriate grazing or cutting, most sites will deteriorate.

The primary threats to grazing marsh are of both a widespread and localised type:

Widespread factors include:-

- Ecologically insensitive flood defence works constructed in the past.*
- Agricultural intensification.*
- Neglect in the form of a decline in traditional management.*
- Eutrophication.*

Localised effects arise from:-

- Industrialisation and urbanisation (particularly in the Greater Thames).*

- *Saltwater flooding due to sea level rise.*

Secondary effects include:-

- *Groundwater abstraction.*
- *Pollution of groundwater or surface water*
- *Aggregate extraction.*

4. Action Plan Objectives and Proposed Targets

- *Maintain the existing habitat extent (300,000 ha) and quality.*
- *Rehabilitate 10,000 ha of grazing marsh habitat which has become too dry, or is intensively managed, by the year 2000. This would comprise 5,000 already targeted in ESAs, with an additional 5,000 ha.*
- *Begin creating 2,500 ha of grazing marsh from arable land in targeted areas, in addition to that which will be achieved by existing ESA schemes, with the aim of completing as much as possible by the year 2000.*

B. Regional Habitat Action Plan

1. Current Status

- 1.1 Riparian grazing marsh habitat is to be found across the Region, with certain significant occurrences such as the Severn-Vrynwy confluence, lower Severn fens, etc. Coastal grazing marsh is extensive around the Severn estuary but more limited near the Humber.

2. Targets and Objectives

- 2.1 Maintain the existing extent of grazing marsh.
- 2.2 Rehabilitate areas of grazing marsh which have become degraded, where possible.
- 2.3 Encourage the creation of new areas of grazing marsh.

3. Proposed Actions for LEAPs

- 3.1 Ensure that flood defence works are undertaken in an ecologically sensitive manner.
- 3.2 Avoid the reseedling of dredged materials where these are unavoidably deposited on grazing marsh areas.

- 3.3 Ensure that water level management plans are developed for all grazing marsh SSSIs by 2000.
- 3.4 Encourage the appropriate management and re-creation of grazing marsh through the use of agri-environment grant schemes.

Area	LEAP	Actions
US	All LEAPs	3.1, 3.2, 3.3, 3.4
LS	All LEAPs	3.1, 3.2, 3.3, 3.4
UT	All LEAPs	3.1, 3.2, 3.3, 3.4
LT	All LEAPs	3.1, 3.2, 3.3, 3.4

4. Proposed EA Regional/National Actions

- 4.1 Support conservation research on areas where rehabilitation and re-creation of grazing marshes could be targeted.

5 Actions So Far

- 5.1 General protection for the habitat; improvements proposed through Water Level Management Plans; Severn -Vyrnwy study (Severn Upper Reaches CMP).

MESOTROPHIC LAKES

A. National Habitat Action Plan (extracts)

1. *Current Status*

Mesotrophic lakes (ie those in the middle of the trophic range) are relatively infrequent in the UK and largely confined to the margins of upland areas in the north and west. They are characterised by having a narrow range of nutrients, the main indicative ones being inorganic nitrogen (N) and total phosphorus (P). Typically, mesotrophic lakes have nutrient levels of 0.3 - 0.65 mgNl⁻¹ and 0.01 - 0.03 mgPl⁻¹. Whilst such levels simplify the complex interaction between plant nutrients and the hydrological and physical characteristics of individual lakes (for instance, virtually all available nutrients are "locked up" in algae during the growing season), they serve to show the sensitivity of the trophic state to artificially increased levels of nitrogen and phosphorus. Thus, this is an increasingly rare type of lake.

Mesotrophic lakes potentially have the highest macrophyte diversity of any lake type. Furthermore, relative to other lake types, they contain a higher proportion of nationally scarce and rare aquatic plants. Macroinvertebrates are well represented, with particularly important groups being dragonflies, water beetles, stoneflies and mayflies.

Rare fish, of which only three species are found in UK lakes, are well represented in mesotrophic lakes. In general, fish communities in mesotrophic lakes are a mix of coarse and salmonid species, but today there are few truly natural assemblages due to introduced species.

2. *Current Factors Affecting the Habitat*

Enrichment by excessive nutrient input (eutrophication) is the main impact. Anthropogenic nutrient inputs can include:-

- sewage effluent;*
- point and diffuse sources associated with agriculture and forestry;*
- accidental spillages (eg slurry);*
- fish farms in the lake and its feeder streams.*

The effects can be exacerbated by excessive water abstraction upstream, leading to a reduction in the quantity of water reaching the lake.

Other sources of pollution which can have significant impacts are industrial pollution and pesticide losses. Water acidification is also a factor in some upland catchments.

Ploughing up of grassland and surrounding habitats, and underdrainage both increase the possibility of soil erosion with a consequent increase in water-

borne sediments. Sediments introduce nutrients into the water column and cause turbidity. Ploughing associated with afforestation can have a similar effect, as can peat-cutting on moorland catchments.

Introductions of fish to lakes can alter the natural integrity of mesotrophic lakes in various ways:

- through competition, altering the native species composition;*
- if bottom-feeding fish are involved, through continual disturbance of the sediments, leading to turbidity and the mobilisation of nutrients (favouring algal blooms);*
- through altering the structure of the food web, for example leading to increased predation of the invertebrates that graze algae.*

Water-borne traffic can damage aquatic plants at the point of launch, bankside wave erosion, passage through strands of vegetation, or the cutting action of propellers. Increased turbidity from boatwash may also compound macrophyte loss.

3. Action Plan Objectives and Proposed Targets

- Maintain the characteristic plant and animal communities of current mesotrophic lakes.*
- Identify and implement effective remedial action to address nutrient-enrichment in polluted mesotrophic lakes by 2010.*

B. Regional Habitat Action Plan

1. Current Status

Natural mesotrophic lakes in this Region are probably mainly confined to the Welsh borders, with only few examples elsewhere (eg Blackbrook Reservoir, Leics) and will be limited in number.

2. Objectives and Targets

- 2.1** Maintain the characteristic plant and animal communities of current mesotrophic lakes.
- 2.2** Identify and implement effective remedial action to address nutrient-enrichment in polluted mesotrophic lakes, where necessary.

3. Proposed Actions for LEAPs

- 3.1** Establish the water quality objectives and associated nutrient standards appropriate for mesotrophic lakes by 1998 and meet targets by 2005.

- 3.2 Review water resource uses where mesotrophic lakes are affected by excessive abstraction by 1998 and meet targets by 2010.
- 3.3 Review appropriate fisheries management policy for mesotrophic lakes affected by fisheries related impacts by 1998 and implement site management plans for restoration by 2005.
- 3.4 Promote the use of best practice management techniques and, for polluted lakes, restoration measures.
- 3.5 Agree conservation strategies and consenting protocols for mesotrophic lake SSSIs with the statutory conservation agencies.

Area	LEAP	Actions
US	Severn Upper Reaches	3.1, 3.2, 3.3, 3.4, 3.5
LT	Soar	3.1, 3.2, 3.4, 3.5

4. Proposed EA Regional/National Actions

- 4.1 Develop a national strategy for the control of eutrophication in England and Wales by 1997.
- 4.2 Investigate the effectiveness of remedial action against nutrient enrichment in mesotrophic lakes.
- 4.3 Agree by 1998 a priority list of lakes requiring remedial treatment.

5 Actions So Far

- 5.1 General protection for the habitat.

ANNEX C

HABITAT STATEMENTS

Grazing marsh (see Annex B)

Fen, carr, marsh, swamp and reedbed (see also Annex B)

Lowland raised bog

Standing open water (see also Annex B)

Rivers and streams

Canals

Blanket bog

Saltmarsh

Estuaries

Urban

FEN, CARR, MARSH, SWAMP AND REEDBED

1. Definition/Status

Fen, carr, marsh, swamp and reedbed are a group of wetland habitats which are widespread and scattered throughout the UK. The UK is also thought to host a large proportion of the fen surviving in the EU. As in other parts of Europe fen vegetation has declined dramatically in the past century.

Fens are peatlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall; they are minerotrophic. Swamp is characterised by water-table levels that are at, or above, the surface of the vegetation for most of the year. Swamps have a species-poor vegetation in comparison to fens. Marsh is a rather ill-defined term but usually refers to vegetation occurring on mineral soil that has a water table close to the surface for most of the year, but not usually above ground level. Carr is swampy woodland often found in association with fens and marshes. The above habitats often occur together, with areas of open water, ditches, and wet grassland.

Within this Region, these habitats are generally scattered, isolated and limited in extent. There are particular concentrations around the West Midlands mosses and meres, the Humber Estuary (reedbeds) and in some river valleys, e.g. the Sow marshes, the Soar valley wetlands.

2. Conservation Direction

Maintain the existing area of fen, carr, marsh, swamp and reedbed. Encourage enhancement through appropriate management. Create new habitats where possible.

Ensure the maintenance of appropriate water quality and water quantity for these habitats. Develop water level management plans where appropriate.

See Annex B for reedbeds and fens action plans.

LOWLAND RAISED BOG

1. Definition/Status

Peatlands can be divided into two types: ombrotrophic peatlands which are fed exclusively by precipitation inputs (rain, snow etc) and minerotrophic peatlands which are additionally fed by ground water and/or streams. Two types of ombrotrophic peatlands are recognised, blanket bogs and lowland raised bogs. This Statement outlines the conservation status of lowland raised bogs in the UK.

Intact lowland raised bogs are one of Europe's rarest and most threatened habitats. They occur throughout the UK in flat low-lying locations or basins. Since around the start of the 19th Century the extent of primary, active lowland raised bog has decreased from 95,000 ha to 6,000 ha, a decline of 94%. The remaining 6,000 ha resource is scattered across a large number of small sites.

Within the Region, lowland raised bogs are found into two areas - the Shropshire mosses and the Humberhead Levels (Hatfield and Thorne Moors).

2. Conservation Direction

Safeguard remaining areas of primary lowland raised bog and with appropriate management ensure that the full functioning hydrological units supporting the habitat are maintained. Safeguard and restore key areas of secondary lowland raised bog which, although modified, still contain sufficient representation of species typical of active raised bogs or the required environmental features that favour peat development.

Measures to be considered further include:-

- Promote alternatives to peat and moss in horticulture and in energy generation.
- Evaluate existing measures for conserving and managing lowland raised bogs.
- Protect lowland raised bogs from inappropriate uses by identifying them in Mineral and other plans, and in Forest Indicative Strategies.
- Promote an understanding and appreciation of lowland raised bogs.
- Encourage the restoration of degraded lowland raised bogs.

STANDING OPEN WATER

1. Definition/Status

Standing open waters include natural systems such as lakes, meres and pools, as well as man-made waters such as reservoirs, ponds and gravel pits. Their size varies from 38,500 ha (Lough Neagh) to ponds a few metres across. The open water zone lies beyond the limits of swamp vegetation, but may contain submerged, free-floating or floating-leaved vegetation. Standing waters are usually classified according to their nutrient status and this can change naturally over time. There are three main types of standing waters. These are: oligotrophic (nutrient poor), eutrophic (nutrient rich) and mesotrophic (an intermediate), although gradations between these types occur. Other types include dystrophic (highly acidic), marl lakes, brackish water lakes, turloughs and other temporary water bodies.

In this Region, standing open waters range from small ponds, scattered across the whole Region, to extensive gravel pits in the larger river valleys, reservoirs of varying sizes, with larger ones especially in upland areas, and a limited number of natural lakes.

2. Conservation Direction

Maintain and improve the conservation interest of standing open waters, through the use of integrated management plans, and the sensitive management of adjacent land. Create new standing open waters, of maximum wildlife benefit, where possible.

Measures to be considered further include:-

- Introduce Statutory Water Quality Objectives where appropriate.
- Prepare water level management plans for the benefit of wildlife, particularly with respect to key sites where appropriate.
- Develop integrated catchment management plans.
- Use existing measures such as the Countryside Stewardship Waterside Landscape option, to support the appropriate management of open waters and their associated habitats.
- Reduce acid emissions to reduce damage to open waters from acid rain.
- Carry out Environmental Assessments of developments which will have an impact on open waters and their associated habitats.

RIVERS AND STREAMS

1. Definition/Status

In their natural state rivers are dynamic systems, continually modifying their form. However in many cases their ability to rejuvenate and create new habitat has been reduced or arrested by flood defence structures and impoundments. Few rivers in the UK have not been physically modified by man and such rivers represent a very valuable resource. Erosion of banks has also been caused by canalisation and the removal of tree cover in historic times. Such activities have resulted in changes in the frequency and magnitude of flooding, altering seasonal patterns of flows and hydrograph form. In addition, flow regulation has altered patterns of sediment transport and nutrient exchange in river systems. Any resulting eutrophication can have detrimental effects on floodplain habitat which still retains some connection with the main stream.

The mosaic of features found in rivers and streams supports a diverse range of plants and animals. For example, riffles and pools support aquatic species, and exposed sediments such as shingle beds and sand bars are important for a range of invertebrates, notably ground beetles, spiders and crane flies. Marginal and bankside vegetation support an array of wild flowers and animals. Rivers and streams often provide a wildlife corridor link between fragmented habitats in intensively farmed areas.

Within this Region, there are 3810 km of designated main rivers; 6400 km of rivers are monitored for water quality purposes; and there are many more ordinary watercourses of varying sizes.

2. Conservation Direction

Maintain and improve the quality, state and structure of all UK rivers and streams and their associated floodplains. Restore degraded river and streams taking account of water quality and quantity, structure and hydraulic connection with the floodplain.

Measures to be considered further include:

- Introduce Statutory Water Quality Objectives, especially for phosphates.
- Use Water Level Management Plans and water abstraction licensing procedures for the benefit of wildlife, particularly with respect to key sites.
- Implement integrated catchment management plans.
- Use existing measures, such as the Countryside Stewardship Waterside Landscape option, to support the appropriate management of rivers, streams and their associated habitats, in particular floodplains.
- Reduce acid emissions to reduce damage to rivers and streams from acid rain.
- Review the powers and duties of water management institutions to manage water for nature conservation objectives.

CANALS

1. Definition/Status

Construction of canals in the UK took place predominantly between 1750 and 1830, although some were built much earlier and others later. The main concentration of canal construction was in the Midlands linking this area to London. Outlying areas often only had local canals. British Waterways currently owns 2,012 miles (including some river navigation) of canals, representing 52% of the canal network in Britain.

Canals can be important for wildlife. Those which no longer carry heavy boat traffic often support highly diverse assemblages of plants and animals and may support nationally scarce species such as the floating water-plantain *Luronium natans* and grass-wrack pondweed *Potamogeton compressus*. The wetland habitats are inter-related with the margins, towpath and hedge or other boundary features which also contribute shelter and emergence sites for aquatic animals. Canal tunnels may provide excellent roosting and breeding sites for bats. The associated habitats are often rich in species, some of which are relicts from formerly widespread habitats such as unimproved grassland, marsh and carr.

There are about 1000 km of canals in this Region, with a particular concentration in the West Midlands conurbation.

2. Conservation Direction

Maintain the existing environmental quality of all canals (remaindered, derelict and navigable) in the UK and enhance the wildlife interest of the habitats associated with key canals through upgrading and improving water quantity, water quality and the restoration of bank-side features.

Measures to be considered further include:

- Implement Statutory Water Quality Objectives.
- Carry out Environmental Assessments for maintenance, management and restoration work, and development affecting canals and their associated habitats.
- Use existing measures, such as the Habitats Scheme, to support the appropriate management of associated habitats.
- Encourage the effective management of all canals, using water level management plans and water abstraction licensing procedures for the benefit of wildlife, particularly in respect to key sites.

BLANKET BOG

1. Definition/Status

Peatlands can be divided into two types: ombrotrophic peatlands which are fed exclusively by precipitation inputs (rain, snow etc) and minerotrophic peatlands which are additionally fed by ground water and/or streams. Two types of ombrotrophic peatlands are recognised, blanket bogs and lowland raised bogs. This Statement outlines the conservation status of blanket bogs.

Blanket bog occurs in the wettest parts of the UK and is found in the north and west of Britain, extending from Devon in the south to Shetland in the north. The total area of blanket bog in the UK is approximately 1.5 million ha, of which by far the largest proportion is found in Scotland. A major part of the total resource of blanket bog in the European Union occurs in the UK.

In this Region, blanket bog habitat is found only in the moorland areas of mid-Wales/Welsh borders, and in the Peak District (though the latter tend to be much degraded due to air pollution).

2. Conservation Direction

Minimise deterioration and promote appropriate management of areas of active blanket bog which retain their hydrological characteristics and rehabilitate areas of damaged blanket bogs where the hydrological integrity is suitable for restoration (eg drain blocking).

Measures to be considered further include:

- Develop national inventories and agree a UK framework for identifying the extent and quality of the resource, the factors affecting the habitat and action required to conserve it, in line with international obligations.
- Protect blanket bogs from inappropriate uses by identifying them in Mineral and other Plans, and in Forest Indicative Strategies.
- Promote alternatives to peat as sources of energy and alternatives to moss for use in horticulture.
- Examine further the role of peatlands as carbon sinks.
- Examine further the functional role of peatlands as dominant factors in catchment dynamics - major sources of drinking water, maintenance of water quality, prevention and soil erosion.
- Secure cross-sector Government Department policies for sustainable utilisation of extensive peatland resources, based on principles of conservation.
- Encourage appropriate grazing, burning and other management of blanket bogs.

SALTMARSH

1. Definition/Status.

There are about 45,000 ha of saltmarsh habitat in the UK. The habitat is widely distributed around the UK covering nearly 1,700 km (about 10%) of the coast. However, just ten sites account for 60% of the total resource. Historically large areas of saltmarsh have been lost as a result of land claim.

Saltmarsh is a highly productive habitat which develops along sheltered coasts with soft, shallow shores which provide protection from strong wave action. 95% of saltmarsh in Great Britain is found within estuaries. It represents a transition from sand and mudflat areas on the lower marsh, where the vegetation is frequently flooded by the tide, through to the upper saltmarsh where creeksides and depressions or pans occur. Here the plant communities are less frequently inundated and for shorter durations. In the uppermost areas of saltmarshes there may be transitions to brackish or freshwater marsh or to dune vegetation or vegetation overlying shingle structures. The exact species composition of saltmarsh communities varies along a north/south gradient in the UK. Many invertebrates, including GB Red Data Book and nationally scarce species are confined to saltmarsh. Areas with high structural and plant diversity, particularly where freshwater seepages provide a transition from fresh to brackish conditions, are particularly important for invertebrates.

Saltmarshes are also important habitats for wintering and passage birds and can become even more important under certain grazing regimes. Notable bird species include barnacle goose and twite. Saltmarshes are important for breeding waders in some areas.

In this Region, there are extensive areas of saltmarsh around the Severn estuary, and more limited areas around the Humber estuary.

2. Conservation Direction

Maintain and enhance the area and quality of saltmarsh and its constituent communities in the UK. Prevent further habitat loss to land claim and reverse poor habitat management.

Measures to be considered further include:

- Pilot the creation of new saltmarsh habitats to replace unavoidable losses from sea level rise or where appropriate opportunities arise through coastal defence setback or behind existing defences.
- Avoid disruption of the dynamics of saltmarsh processes by coastal defence and other construction works.
- Review the powers and duties of coastal authorities for safeguarding this habitat.
- Implement strategies for managing the coastal zone at local, regional and national levels.
- Encourage reductions in marine contaminants stemming from human activities.
- Encourage research projects into the ecology of saltmarsh habitat.

ESTUARIES

1. Definition/Status

An estuary is a partially enclosed area of water and soft tidal shore, open to saline water from the sea and receiving fresh water from rivers, land run-off or seepage. The core parts of an estuary are the intertidal and subtidal areas. These core areas are associated with a number of important related habitats such as saltmarsh, sand dunes, shingle, lagoons and coastal grazing marsh, all of which are outlined in separate Habitat Statements.

163 estuaries have been identified around the coast of the UK, covering an area of 581,240 ha. This represents approximately 30% of the total estuarine area of the North Sea and Atlantic seaboard of western Europe (c 1,895,000 ha). The length of estuarine coastline in the UK is 9,849 km, approximately 50% of the total length of the UK coastline.

The two estuary systems in this Region, the Severn estuary and the Humber estuary, are amongst the most important, in conservation terms, of the British estuaries.

2. Conservation Direction

Maintain and enhance the extent and quality of estuarine habitats in the UK, including the full diversity of estuarine communities.

Measures to be considered further include:

- Protect estuaries from coastal development and other activities which cause environmental damage.
- Review the powers and duties of coastal and other authorities for safeguarding this habitat.
- Identify the full diversity of wildlife features of estuaries and maintain the extent and quality of the resource.
- Promote the management of estuaries within the framework of SACs and other coastal zone strategies which permit the natural functioning of sediment systems.
- Improve water quality in estuaries via catchment management and other pollution control mechanisms.
- Develop plans which permit the creation of new estuarine habitats to help compensate for losses due to sea level rise.
- Reduce the environmental impact of fisheries.

URBAN

1. Definition/Status

Urban wildlife habitats include buildings and hard surfaces but for the purposes of this Habitat Statement they are defined as greenspaces and the associated ecological niches found within built up areas. Greenspaces can be divided into four distinct categories:

- i. Remnants of ancient natural systems, such as woodland, wetland, freshwater and estuarine.
- ii. Pre-industrial rural landscapes with arable land, meadows, heathland, grazing marshes and villages.
- iii. Managed greenspaces. These include town parks, pocket parks, amenity grassland, private gardens and planted shrubberies.
- iv. Naturally seeded urban areas or industrial sites such as demolition sites, disused railway lands or unexploited industrial land.

This Region includes several significant urban areas - notably the West Midlands conurbation, Coventry, Nottingham, Leicester, Derby, Stoke-on-Trent - where rivers form important wildlife features and corridors.

2. Conservation Direction

Maintain the existing diversity and extent of wildlife in all urban areas, expanding the range and distribution of rare and common species and enabling this resource to be utilised as an educational tool.

- Survey and evaluate the full range of urban habitats (including buildings) in terms of their importance in maintaining wildlife interest.
- Protect sites important for wildlife from changes in land use.
- Encourage the integration of green networks (incorporating a full range of wildlife habitats) in planning and developments within the urban environment.
- Implement strategies to enable the use of vacant and derelict land, either temporarily or permanently as wildlife habitats.
- Incorporate the conservation and enhancement of wildlife into the management of urban greenspace.
- Encourage community action to survey, plan for and manage wildlife habitats.
- Promote wild space in urban areas as an educational resource to inform communities about local wildlife in the context of the wider environment.

ANNEX D

SPECIES AND HABITATS IN LEAPS

KEY

- * = Key catchment for conservation action
- ✓ = Conservation action required

SPECIES

- WV = Water vole
- OT = Otter
- AW = Aquatic warbler
- Bl = Bittern
- CN = Great crested newt
- NT = Natterjack toad
- AS = Allis shad
- TS = Twaite shad
- MF = Marsh fritillary
- WC = White-clawed crayfish
- PM = Freshwater pearl mussel
- DW = Desmoulin's whorl snail
- RP = Ribbon-leaved water-plantain
- FP = Floating water-plantain
- DF = Derbyshire feather-moss

HABITATS

- RB = Reedbeds
- FN = Fens
- GM = Coastal and floodplain grazing marsh
- ML = Mesotrophic lakes
- MS = Fen, carr, marsh, swamp and reedbed
- RS = Lowland raised bog
- OW = Standing open water
- RV = Rivers and streams
- CL = Canals
- BB = Blanket bog
- SM = Saltmarsh
- ES = Estuaries
- UR = Urban

BIODIVERSITY - ACTION FOR SPECIES IN LEAPs

LEAP	WV	OT	AW	BI	CN	NT	AS	TS	MF	WC	PM	DW	RP	FP	DF
<u>Upper Severn</u>															
Severn U/S Perry	✓	*		✓	✓				✓	✓	✓			*	
Severn Perry - Teme	✓	*		✓	✓		✓	*	✓	✓	✓	*	*	*	
Teme	✓	*		✓	✓		✓	*	✓	✓	*		✓	*	
Stour	✓	✓		✓	✓				✓				✓	*	
<u>Lower Severn</u>															
Avon	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓		
Severn Lower Reaches	✓	✓	✓	✓	✓			✓	✓	✓			✓		
Severn Estuary	✓	✓	✓	✓	✓		*	*	✓						
<u>Upper Trent</u>															
Upper Trent, Sow, Peak	✓	✓		✓	✓	*				✓				*	
Dove and Churnet	✓	✓		✓	✓					✓					
Tame and Anker	✓	✓		✓	✓					✓					
Blythe, Cole, Bourne	✓	✓		✓	✓					✓					
<u>Lower Trent</u>															
Trent Dove-Humber	✓	✓		✓	✓				✓	✓				*	
Derwent	✓	✓		✓	✓				✓	✓				*	
Soar	✓	✓		✓	✓				✓	✓				*	
Erewash	✓	✓		✓	✓				✓	✓					
Idle, Maun, Torne	✓	✓		✓	✓				✓	✓					
Humber Estuary	✓	✓		*	✓				✓						

BIODIVERSITY - ACTION FOR HABITATS IN LEAPs

LEAP	RB	FN	GM	ML	MS	RS	OW	RV	CL	BB	SM	ES	UR
<u>Upper Severn</u>													
Severn U/S Perry	✓	✓	✓	✓	✓		✓	✓	✓	*			
Severn Perry - Teme	✓	✓	✓	✓	✓	*	✓	✓	✓				✓
Teme	✓	✓	✓	✓	✓		✓	✓	✓				✓
Stour	✓	✓	✓		✓		✓	✓	✓				✓
<u>Lower Severn</u>													
Avon	✓	✓	✓		✓		✓	✓	✓				✓
Severn Lower Reaches	✓	✓	✓		✓		✓	✓	✓				✓
Severn Estuary	✓	✓	✓		✓		✓	✓	✓		*	*	✓
<u>Upper Trent</u>													
Upper Trent, Sow, Penk	✓	✓	✓		✓		✓	✓	✓				✓
Dove and Churnet	✓	✓	✓		✓		✓	✓	✓	*			✓
Tame and Anker	✓	✓	✓		✓		✓	✓	✓				✓
Blythe, Cole, Bourne	✓	✓	✓		✓		✓	✓	✓				✓
<u>Lower Trent</u>													
Trent Dove-Humber	*	✓	✓		✓		✓	✓	✓				✓
Derwent	✓	✓	✓		✓		✓	✓	✓	*			✓
Soar	✓	✓	✓	✓	✓		✓	✓	✓				✓
Erewash	✓	✓	✓		✓		✓	✓	✓				✓
Idle, Maun, Torne	*	✓	✓		✓	*	✓	✓	✓				✓
Humber Estuary	✓	✓	✓		✓		✓	✓			*	*	

ANNEX E - CONTACT POINTS, ETC

	Contact Point	Lead Partner	Champion
Water vole	EA	WV St. Gp.	
Otter	EA	WT/EA	
Aquatic warbler	CCW	RSPB	
Bittern	EN	RSPB	
Great crested newt	EN	EN/Herp. Cons. T.	
Natterjack toad	EN	Herp. Cons. T.	
Allis Shad	MAFF	MAFF	
Twaite shad	MAFF	MAFF	
Marsh Fritillary	CCW	Butt. Cons.	
White-clawed crayfish	EA	Game Cons.	
Freshwater pearl mussel	SNH	EA/SNH	
Desmoulin's whorl snail	EN	EN	
Ribbon-leaved water-plantain	EA	EA/EN	
Floating water-plantain	CCW	BW	
Derbyshire feather-moss	EN	EN	
Reedbeds	EN		
Fens	EN		
Coastal and floodplain grazing marsh	EN		
Mesotrophic lakes	SEPA		